



SEQUENCE LISTING

RECEIVED
AUG 29 2000
TECH CENTER 16002000
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AUG 23 2000
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(1) GENERAL INFORMATION:

- (i) APPLICANT: LAFFEND, LISA ANNE
NAGARAJAN, VASANTHA
NAKAMURA, CHARLES
- (ii) TITLE OF INVENTION: BIOCONVERSION OF A FERMENTABLE
CARBON SOURCE TO 1,3-PROPANE-
DIOL BY A SINGLE MICROORGANISM
- (iii) NUMBER OF SEQUENCES: 46
- (iv) CORRESPONDENCE ADDRESS:
 - (A) NAME: E. I. DUPONT DE NEMOURS AND COMPANY
 - (B) STREET: 1007 MARKET STREET
 - (C) CITY: WILMINGTON
 - (D) STATE: DELAWARE
 - (E) COUNTRY: U.S.A.
 - (F) ZIP: 19898
- (iv) CORRESPONDENCE ADDRESS:
 - (A) NAME: GENENCOR INTERNATIONAL, INC.
 - (B) STREET: 4 CAMBRIDGE PLACE
1870 SOUTH WINTON ROAD
 - (C) CITY: ROCHESTER
 - (D) STATE: NEW YORK
 - (E) COUNTRY: U.S.A.
 - (F) ZIP: 14618
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: 3.50 INCH DISKETTE
 - (B) COMPUTER: IBM
 - (C) OPERATING SYSTEM: MICROSOFT WINDOWS 95
 - (D) SOFTWARE: MICROSOFT WORD 7.0A
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER:
 - (B) FILING DATE:
 - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: 08/440,293
 - (B) FILING DATE: MAY 12, 1995
- (viii) ATTORNEY/AGENT INFORMATION:
 - (A) NAME: LINDA AXAMETHY FLOYD
 - (B) REGISTRATION NUMBER: 33,692
 - (C) REFERENCE/DOCKET NUMBER: CR9715 US DIV1
- (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: 302-892-8112
 - (B) TELEFAX: 302-773-0164

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 12145 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GTCGACCACC ACGGTGGTGA CTTTAATGCC GCTCTCATGC AGCAGCTCGG TGGCGGTCTC 60
AAAATTCAGG ATGTCGCCGG TATAGTTTTT GATAATCAGC AAGACGCCTT CGCCGCCGTC 120
AATTTGCATC GCGCATTCAA ACATTTTGTC CGGCGTCGGC GAGGTGAATA TTTCCCCCGG 180
ACAGGCGCCG GAGAGCATGC CCTGGCCGAT ATAGCCGCAG TGCATCGGTT CATGTCCGCT 240
GCCGCCGCCG GAGAGCAGGG CCACCTTGCC AGCCACCGGC GCGTCGGTGC GGGTCACATA 300
CAGCGGGTCC TGATGCAGGG TCAGCTGCGG ATGGGCTTTA GCCAGCCCCT GTAATTGTTC 360
ATTCAGTACA TCTTCAACAC GGTAAATCAG CTTTTTCATT ATTCAGTGCT CCGTTGGAGA 420
AGGTTTCGATG CCGCCTCTCT GCTGGCGGAG GCGGTCATCG CGTAGGGGTA TCGTCTGACG 480
GTGGAGCGTG CCTGGCGATA TGATGATTCT GGCTGAGCGG ACGAAAAAAA GAATGCCCCG 540
ACGATCGGGT TTCATTACGA AACATTGCTT CCTGATTTTG TTTCTTTATG GAACGTTTTT 600
GCTGAGGATA TGGTGAAAAT GCGAGCTGGC GCGCTTTTTT TCTTCTGCCA TAAGCGGCGG 660
TCAGGATAGC CGGCGAAGCG GGTGGGAAAA AATTTTTTGC TGATTTTCTG CCGACTGCGG 720
GAGAAAAGGC GGTCAAACAC GGAGGATTGT AAGGGCATTG TCGGGCAAAG GAGCGGATCG 780
GGATCGCAAT CCTGACAGAG ACTAGGGTTT TTTGTTCCAA TATGGAACGT AAAAAATTAA 840
CCTGTGTTTC ATATCAGAAC AAAAAGGCGA AAGATTTTTT TGTTCCCTGC CGGCCCTACA 900
GTGATCGCAC TGCTCCGTA CGCTCCGTTC AGGCCGCGCT TCACTGGCCG GCGCGGATAA 960
CGCCAGGGCT CATCATGTCT ACATGCGCAC TTATTTGAGG GTGAAAGGAA TGCTAAAAGT 1020
TATTCAATCT CCAGCCAAAT ATCTTCAGGG TCCTGATGCT GCTGTTCTGT TCGGTCAATA 1080
TGCCAAAAAC CTGGCGGAGA GCTTCTTCGT CATCGCTGAC GATTTCGTAA TGAAGCTGGC 1140
GGGAGAGAAA GTGGTGAATG GCCTGCAGAG CCACGATATT CGCTGCCATG CGGAACGGTT 1200
TAACGGCGAA TGCAGCCATG CGGAAATCAA CCGTCTGATG GCGATTTTGC AAAACAGGG 1260
CTGCCGCGGC GTGGTCGGGA TCGGCGGTGG TAAAACCCTC GATACCGCGA AGGCGATCGG 1320
TTACTACCAG AAGCTGCCGG TGGTGGTGAT CCCGACCATC GCCTCGACCG ATGCGCCAAC 1380

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CAGCGCGCTG	TCGGTGATCT	ACACCGAAGC	GGGCGAGTTT	GAAGAGTATC	TGATCTATCC	1440
GAAAAACCCG	GATATGGTGG	TGATGGACAC	GGCGATTATC	GCCAAAGCGC	CGGTACGCCT	1500
GCTGGTCTCC	GGCATGGGCG	ATGCGCTCTC	CACCTGGTTC	GAGGCCAAAG	CTTGCTACGA	1560
TGCGCGCGCC	ACCAGCATGG	CCGGAGGACA	GTCCACCGAG	GCGGCGCTGA	GCCTCGCCCG	1620
CCTGTGCTAT	GATACGCTGC	TGGCGGAGGG	CGAAAAGGCC	CGTCTGGCGG	CGCAGGCCGG	1680
GGTAGTGACC	GAAGCGCTGG	AGCGCATCAT	CGAGGCGAAC	ACTTACCTCA	GCGGCATTGG	1740
CTTTGAAAGC	AGTGGCCTGG	CCGCTGCCCC	TGCAATCCAC	AACGGTTTCA	CCATTCTTGA	1800
AGAGTGCCAT	CACCTGTATC	ACGGTGAGAA	AGTGGCCTTC	GGTACCCTGG	CGCAGCTGGT	1860
GCTGCAGAAC	AGCCCGATGG	ACGAGATTGA	AACGGTGCGG	GGCTTCTGCC	AGCGCGTCGG	1920
CCTGCCGGTG	ACGCTCGCGC	AGATGGGCGT	CAAAGAGGGG	ATCGACGAGA	AAATCGCCGC	1980
GGTGGCGAAA	GCTACCTGCG	CGGAAGGGGA	AACCATCCAT	AATATGCCGT	TTGCGGTGAC	2040
CCCGGAGAGC	GTCCATGCCG	CTATCCTCAC	CGCCGATCTG	TTAGGCCAGC	AGTGGCTGGC	2100
GCGTTAATTC	GCGGTGGCTA	AACCGCTGGC	CCAGGTCAGC	GGTTTTTCTT	TCTCCCCTCC	2160
GGCAGTCGCT	GCCGGAGGGG	TTCTCTATGG	TACAACGCGG	AAAAGGATAT	GA CTGTTCAG	2220
ACTCAGGATA	CCGGGAAGGC	GGTCTCTTCC	GTCATTGCCC	AGTCATGGCA	CCGCTGCAGC	2280
AAGTTTATGC	AGCGCGAAAC	CTGGCAAACG	CCGCACCAGG	CCCAGGGCCT	GACCTTCGAC	2340
TCCATCTGTC	GGCGTAAAAC	CGCGCTGCTC	ACCATCGGCC	AGGCGGCGCT	GGAAGACGCC	2400
TGGGAGTTTA	TGGACGGCCG	CCCCTGCGCG	CTGTTTATTC	TTGATGAGTC	CGCCTGCATC	2460
CTGAGCCGTT	GCGGCGAGCC	GCAAACCCTG	GCCCAGCTGG	CTGCCCTGGG	ATTTTCGCGAC	2520
GGCAGCTATT	GTGCGGAGAG	CATTATCGGC	ACCTGCGCGC	TGTCGCTGGC	CGCGATGCAG	2580
GGCCAGCCGA	TCAACACCGC	CGGCGATCGG	CATTTTAAAG	AGGCGCTACA	GCCATGGAGT	2640
TTTTGCTCGA	CGCCGGTGTT	TGATAACCAC	GGGCGGCTGT	TCGGCTCTAT	CTCGCTTTGC	2700
TGTCTGGTCG	AGCACCAGTC	CAGCGCCGAC	CTCTCCCTGA	CGCTGGCCAT	CGCCCGCGAG	2760
GTGGGTA ACT	CCCTGCTTAC	CGACAGCCTG	CTGGCGGAAT	CCAACCGTCA	CCTCAATCAG	2820
ATGTACGGCC	TGCTGGAGAG	CATGGACGAT	GGGGTGATGG	CGTGGAACGA	ACAGGGCGTG	2880
CTGCAGTTTC	TCAATGTTCA	GGCGGCGAGA	CTGCTGCATC	TTGATGCTCA	GGCCAGCCAG	2940
GGGAAAAATA	TCGCCGATCT	GGTGACCCTC	CCGGCGCTGC	TGCGCCGCGC	CATCAAACAC	3000
GCCCCGCGCC	TGAATCACGT	CGAAGTCACC	TTTGAAAGTC	AGCATCAGTT	TGTCGATGCG	3060
GTGATCACCT	TAAAACCGAT	TGTCGAGGCG	CAAGGCAACA	GTTTTATTCT	GCTGCTGCAT	3120

CCGGTGGAGC	AGATGCGGCA	GCTGATGACC	AGCCAGCTCG	GTAAAGTCAG	CCACACCTTT	3180
GAGCAGATGT	CTGCCGACGA	TCCGGAAACC	CGACGCCTGA	TCCACTTTGG	CCGCCAGGCG	3240
GCGCGCGGCG	GCTTCCCGGT	GCTACTGTGC	GGCGAAGAGG	GGGTCGGGAA	AGAGCTGCTG	3300
AGCCAGGCTA	TTCACAATGA	AAGCGAACGG	GCGGGCGGCC	CCTACATCTC	CGTCAACTGC	3360
CAGCTATATG	CCGACAGCGT	GCTGGGCCAG	GACTTTATGG	GCAGCGCCCC	TACCGACGAT	3420
GAAAATGGTC	GCCTGAGCCG	CCTTGAGCTG	GCCAACGGCG	GCACCCTGTT	TCTGGAAAAG	3480
ATCGAGTATC	TGGCGCCGGA	GCTGCAGTCG	GCTCTGCTGC	AGGTGATTAA	GCAGGGCGTG	3540
CTCACCCGCC	TCGACGCCCC	GCGCCTGATC	CCGGTGGATG	TGAAGGTGAT	TGCCACCACC	3600
ACCGTCGATC	TGGCCAATCT	GGTGGAACAG	AACCGCTTTA	GCCGCCAGCT	GTA CTATGCG	3660
CTGCACTCCT	TTGAGATCGT	CATCCCGCCG	CTGCGCGCCC	GACGCAACAG	TATTCCGTCG	3720
CTGGTGCATA	ACCGGTTGAA	GAGCCTGGAG	AAGCGTTTCT	CTTCGCGACT	GAAAGTGGAC	3780
GATGACGCGC	TGGCACAGCT	GGTGGCCTAC	TCGTGGCCGG	GGAATGATTT	TGAGCTCAAC	3840
AGCGTCATTG	AGAATATCGC	CATCAGCAGC	GACAACGGCC	ACATTGCGCT	GAGTAATCTG	3900
CCGGAATATC	TCTTTTCCGA	GCGGCCGGGC	GGGGATAGCG	CGTCATCGCT	GCTGCCGGCC	3960
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GGGCGGGTGC	AGGAGATGTC	GCAGCTGCTC	AATATCGGCC	GCACCACCCT	GTGGCGCAAA	4080
ATGAAGCAGT	ACGATATTGA	CGCCAGCCAG	TTCAAGCGCA	AGCATCAGGC	CTAGTCTCTT	4140
CGATTGCGCG	CATGGAGAAC	AGGGCATCCG	ACAGGCGATT	GCTGTAGCGT	TTGAGCGCGT	4200
CGCGCAGCGG	ATGCGCGCGG	TCCATGGCCG	TCAGCAGGCG	TTGAGCCGA	CGGGACTGGG	4260
TGCGCGCCAC	GTGCAGCTGG	GCAGAGGCGA	GATTCTCTCC	CGGGATCACG	AACTGTTTTA	4320
ACGGGCCGCT	CTCGGCCATA	TTGCGGTCTG	TAAGCCGCTC	CAGGGCGGTG	ATCTCCTCTT	4380
CGCCGATCGT	CTGGCTCAGG	CGGGTCAGGC	CCCGCGCATC	GCTGGCCAGT	TCAGCCCCCA	4440
GCACGAACAG	CGTCTGCTGA	ATATGGTGCA	GGCTTTCCCG	CAGCCCGGCG	TCGCGGGTCG	4500
TGGCGTAGCA	GACGCCCAGC	TGGGATATCA	GTTTCATCGAC	GGTGCCGTAG	GCCTCGACGC	4560
GAATATGGTC	TTTCTCGATG	CGGCTGCCGC	CGTACAGGGC	GGTGGTGCCT	TTATCCCCGG	4620
TGCGGGTATA	GATACGATAC	ATTCAGTTTC	TCTCACTTAA	CGGCAGGACT	TTAACCAGCT	4680
GCCCCGCGTT	GGCGCCGAGC	GTACGCAGTT	GATCGTCGCT	ATCGGTGACG	TGTCCGGTAG	4740
CCAGCGGCGC	GTCCGCCGGC	AGCTGGGCAT	GAGTGAGGGC	TATCTCGCCG	GACGCGCTGA	4800
GCCCCGATACC	CACCCGCAGG	GGCGAGCTTC	TGGCCGCCAG	GGCGCCGAGC	GCAGCGGCGT	4860

CACCGCCTCC	GTCATAGGTT	ATGGTCTGGC	AGGGGACCCC	CTGCTCCTCC	AGCCCCCAGC	4920
ACAGCTCATT	GATGGCGCCG	GCATGGTGCC	CGCGCGGATC	GTAAACAGG	CGTACGCCTG	4980
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GGCAATCTCC	TGCTCGTTGC	CTTTACGCGG	GTTTCGAGAAC	GCATTGCCGT	CTTTTAGAGC	5100
CATCTCCGCC	ATGTAGGGGA	AGTCGGCCTC	TTTTACCCCC	AGATCGCGCA	GATGCTGCGG	5160
AATACCGATA	TCCATCGACA	GACGCGTGAT	AGCGGCGATG	GCTTTTTCGG	CCGCGTCGAG	5220
AGTGGACAGT	CCGGTGATAT	TTTCGCCCCAT	CAGTTCAGCG	ATATCGGCGA	ATTTCTCCGG	5280
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CGGCATGTCG	TACAGGCCGC	CCAGCTGGTG	CGCCATGGCG	TGCACGTAGC	CGAGGTTGGC	5400
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CAGGGCATCC	ATCCCGGTCTG	CCGCGGTCAG	GGCGGCCGGT	TTACCGATCA	TCAGCAGTGG	5640
ATCGTTGATA	GAGACCGACG	GCAGTTTGCG	CCAGCTGACG	ATCACAACT	TCACTTTGGT	5700
TTGCGTGTG	GTCAGGACGC	AGTGGCGGGT	GACCTCGCTG	GCGGTGCCGG	CGGTGGTATT	5760
GACCGCGACG	ATAGGCGGCA	GCGGGTTGGT	CAGGGTCTCG	ATTCCGGCAT	ACTGGTACAG	5820
ATCGCCCTCA	TGGGTGGCGG	CGATGCCGAT	GCCTTTGCCG	CAATCGTGCG	GGCTGCCGCC	5880
GCCCACGGTG	ACGATGATGT	CGCACTGTTC	GCGGCGAAAC	ACGGCGAGGC	CGTCGCGCAC	5940
GTTGGTGTCT	TTGCGGTTCG	GCTCGACGCC	GTCAAAGATC	GCCACCTCGA	TCCCGGCCTC	6000
CCGCAGATAA	TGCAGGGTTT	TGTCCACCGC	GCCATCTTTA	ATTGCCCCGA	GGCCTTTGTC	6060
GGTGACCAGC	AGGGCTTTTT	TCCCCCCCAG	CAGCTGGCAG	CGTTCGCCGA	CTACGGAAAT	6120
GGCGTTGGGG	CCAAAAAGT	TAACGTTTGG	CACCAGATAA	TCAAACATAC	GATAGCTCAT	6180
AATATACCTT	CTCGCTTCAG	GTTATAATGC	GGAAAAACAA	TCCAGGGCGC	ACTGGGCTAA	6240
TAATTGATCC	TGCTCGACCG	TACCGCCGCT	AACGCCGACG	GCGCCAATTA	CCTGCTCATT	6300
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ACCGTACAGA	GATTGTCCTG	GCTGGACCGC	TGACGTAATT	TCATGGGTAC	CTTGCTTCAG	6420
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CATCCGCTGG	ATAAGCAGCG	TGTTGCCTCC	GCGGTCAACT	ACGAAAACA	CCACCGCCAC	6540
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TTTTGTCAGC	GTTATTTTGT	CGCCCGCCAT	GATTTAGTCA	ATAGGGTTAA	AATAGCGTCG	6780
GAAAAACGTA	ATTAAGGGCG	TTTTTTATTA	ATTGATTTAT	ATCATTGCGG	GCGATCACAT	6840
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TGCCGGTAAT	GGCCGGGCGG	CAACGACGCT	GGCCCGGCGT	ATTCGCTACC	GTCTGCGGAT	7020
TTCACCTTTT	GAGCCGATGA	ACAATGAAAA	GATCAAAACG	ATTTGCAGTA	CTGGCCCAGC	7080
GCCCCGTCAA	TCAGGACGGG	CTGATTGGCG	AGTGGCCTGA	AGAGGGGCTG	ATCGCCATGG	7140
ACAGCCCCTT	TGACCCGGTC	TCTTCAGTAA	AAGTGGACAA	CGGTCTGATC	GTCGAACTGG	7200
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TGGATATTCA	CGTCAGCCGG	GAGGAGATCA	TTGCCATCAC	TACCGCCATC	ACGCCGGCCA	7380
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AGATGCTGCC	GGGCACCGAC	TTTATTTTCT	CCGGCTACAG	CGCGGTGCCG	AACTACGACA	8160
ACATGTTCGC	CGGCTCGAAC	TTCGATGCGG	AAGATTTTGA	TGATTACAAC	ATCCTGCAGC	8220
GTGACCTGAT	GGTTGACGGC	GGCCTGCGTC	CGGTGACCGA	GGCGGAAACC	ATTGCCATTC	8280
GCCAGAAAGC	GGCGCGGGCG	ATCCAGGCGG	TTTTCCGCGA	GCTGGGGCTG	CCGCCAATCG	8340

CCGACGAGGA	GGTGGAGGCC	GCCACCTACG	CGCACGGCAG	CAACGAGATG	CCGCCGCGTA	8400
ACGTGGTGGA	GGATCTGAGT	GCGGTGGAAG	AGATGATGAA	GCGCAACATC	ACCGGCCTCG	8460
ATATTGTCGG	CGCGCTGAGC	CGCAGCGGCT	TTGAGGATAT	CGCCAGCAAT	ATTCTCAATA	8520
TGCTGCGCCA	GCGGGTCACC	GGCGATTACC	TGCAGACCTC	GGCCATTCTC	GATCGGCAGT	8580
TCGAGGTGGT	GAGTGCGGTC	AACGACATCA	ATGACTATCA	GGGGCCGGGC	ACCGGCTATC	8640
GCATCTCTGC	CGAACGCTGG	GCGGAGATCA	AAAATATTCC	GGGCGTGGTT	CAGCCCGACA	8700
CCATTGAATA	AGGCGGTATT	CCTGTGCAAC	AGACAACCCA	AATTCAGCCC	TCTTTTACCC	8760
TGAAAACCCG	CGAGGGCGGG	GTAGCTTCTG	CCGATGAACG	CGCCGATGAA	GTGGTGATCG	8820
GCGTCGGCCC	TGCCTTCGAT	AAACACCAGC	ATCACACTCT	GATCGATATG	CCCCATGGCG	8880
CGATCCTCAA	AGAGCTGATT	GCCGGGGTGG	AAGAAGAGGG	GCTTCACGCC	CGGGTGGTGC	8940
GCATTCTGCG	CACGTCCGAC	GTCTCCTTTA	TGGCCTGGGA	TGCGGCCAAC	CTGAGCGGCT	9000
CGGGGATCGG	CATCGGTATC	CAGTCGAAGG	GGACCACGGT	CATCCATCAG	CGCGATCTGC	9060
TGCCGCTCAG	CAACCTGGAG	CTGTTCTCCC	AGGCGCCGCT	GCTGACGCTG	GAGACCTACC	9120
GGCAGATTGG	CAAAAACGCT	GCGCGCTATG	CGCGCAAAGA	GTCACCTTCG	CCGGTGCCGG	9180
TGGTGAACGA	TCAGATGGTG	CGGCCGAAAT	TTATGGCCAA	AGCCGCGCTA	TTTCATATCA	9240
AAGAGACCAA	ACATGTGGTG	CAGGACGCCG	AGCCCGTCAC	CCTGCACATC	GACTTAGTAA	9300
GGGAGTGACC	ATGAGCGAGA	AAACCATGCG	CGTGCAGGAT	TATCCGTTAG	CCACCCGCTG	9360
CCCGGAGCAT	ATCCTGACGC	CTACCGGCAA	ACCATTGACC	GATATTACCC	TCGAGAAGGT	9420
GCTCTCTGGC	GAGGTGGGCC	CGCAGGATGT	GCGGATCTCC	CGCCAGACCC	TTGAGTACCA	9480
GGCGCAGATT	GCCGAGCAGA	TGCAGCGCCA	TGCGGTGGCG	CGCAATTTCC	GCCGCGCGGC	9540
GGAGCTTATC	GCCATTCCTG	ACGAGCGCAT	TCTGGCTATC	TATAACGCGC	TGCGCCCGTT	9600
CCGCTCCTCG	CAGGCGGAGC	TGCTGGCGAT	CGCCGACGAG	CTGGAGCACA	CCTGGCATGC	9660
GACAGTGAAT	GCCGCCTTTG	TCCGGGAGTC	GGCGGAAGTG	TATCAGCAGC	GGCATAAGCT	9720
GCGTAAAGGA	AGCTAAGCGG	AGGTCAGCAT	GCCGTTAATA	GCCGGGATTG	ATATCGGCAA	9780
CGCCACCACC	GAGGTGGCGC	TGGCGTCCGA	CTACCCGCAG	GCGAGGGCGT	TTGTTGCCAG	9840
CGGGATCGTC	GCGACGACGG	GCATGAAAGG	GACGCGGGAC	AATATCGCCG	GGACCCTCGC	9900
CGCGCTGGAG	CAGGCCCTGG	CGAAAACACC	GTGGTCGATG	AGCGATGTCT	CTCGCATCTA	9960
TCTTAACGAA	GCCGCGCCGG	TGATTGGCGA	TGTGGCGATG	GAGACCATCA	CCGAGACCAT	10020
TATCACCGAA	TCGACCATGA	TCGGTCATAA	CCCGCAGACG	CCGGGCGGGG	TGGGCGTTGG	10080

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GGGGTGGATC	GTACTGATTG	ACGACGCCGT	CGATTTCTT	GACGCCGTGT	GGTGGCTCAA	10200
TGAGGCGCTC	GACCGGGGGA	TCAACGTGGT	GGCGGCGATC	CTCAAAAAGG	ACGACGGCGT	10260
GCTGGTGAAC	AACCGCCTGC	GTAAAACCT	GCCGGTGGTG	GATGAAGTGA	CGCTGCTGGA	10320
GCAGGTCCCC	GAGGGGGTAA	TGGCGGCGGT	GGAAGTGGCC	GCGCCGGGCC	AGGTGGTGCG	10380
GATCCTGTCG	AATCCCTACG	GGATCGCCAC	CTTCTTCGGG	CTAAGCCCGG	AAGAGACCCA	10440
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CCCGCAGGGG	GATGTGCAGT	CGCGGGTGAT	CCCGGCGGGC	AACCTCTACA	TTAGCGGCGA	10560
AAAGCGCCGC	GGAGAGGCCG	ATGTCGCCGA	GGGCGCGGAA	GCCATCATGC	AGGCGATGAG	10620
CGCCTGCGCT	CCGGTACGCG	ACATCCGCGG	CGAACC GGCG	ACCCACGCCG	GCGGCATGCT	10680
TGAGCGGGTG	CGCAAGGTAA	TGGCGTCCCT	GACCGGCCAT	GAGATGAGCG	CGATATACAT	10740
CCAGGATCTG	CTGGCGGTGG	ATACGTTTAT	TCCGCGCAAG	GTGCAGGGCG	GGATGGCCGG	10800
CGAGTGCGCC	ATGGAGAATG	CCGTGCGGAT	GGCGGCGATG	GTGAAAGCGG	ATCGTCTGCA	10860
AATGCAGGTT	ATCGCCCGCG	AACTGAGCGC	CCGACTGCAG	ACCGAGGTGG	TGGTGGGCGG	10920
CGTGGAGGCC	AACATGGCCA	TCGCCGGGGC	GTTAACCACT	CCCGGCTGTG	CGGCGCCGCT	10980
GGCGATCCTC	GACCTCGGCG	CCGGCTCGAC	GGATGCGGCG	ATCGTCAACG	CGGAGGGGCA	11040
GATAACGGCG	GTCCATCTCG	CCGGGGCGGG	GAATATGGTC	AGCCTGTTGA	TTAAAACCGA	11100
GCTGGGCCTC	GAGGATCTTT	CGCTGGCGGA	AGCGATAAAA	AAATACCCGC	TGGCCAAAGT	11160
GGAAAGCCTG	TTCAGTATTC	GTCACGAGAA	TGGCGCGGTG	GAGTTCTTTC	GGGAAGCCCT	11220
CAGCCCGGCG	GTGTTGCGCA	AAGTGGTGTA	CATCAAGGAG	GGCGAACTGG	TGCCGATCGA	11280
TAACGCCAGC	CCGCTGGAAA	AAATTCGTCT	CGTGCGCCGG	CAGGCGAAAG	AGAAAGTGTT	11340
TGTCACCAAC	TGCCTGCGCG	CGCTGCGCCA	GGTCTCACCC	GGCGGTTCCT	TTCGCGATAT	11400
CGCCTTTGTG	GTGCTGGTGG	GCGGCTCATC	GCTGGACTTT	GAGATCCCGC	AGCTTATCAC	11460
GGAAGCCTTG	TCGCACTATG	GCGTGGTTCG	CGGGCAGGGC	AATATTCGGG	GAACAGAAGG	11520
GCCGCGCAAT	GCGGTGCGCA	CCGGGCTGCT	ACTGGCCGGT	CAGGCGAATT	AAACGGGCGC	11580
TCGCGCCAGC	CTCTCTCTTT	AACGTGCTAT	TTCAGGATGC	CGATAATGAA	CCAGACTTCT	11640
ACCTTAACCG	GGCAGTGCCT	GGCCGAGTTT	CTTGGCACCG	GATTGCTCAT	TTTCTTCGGC	11700
GCGGGCTGCG	TCGCTGCGCT	GCGGGTCCGC	GGGGCCAGCT	TTGGTCAGTG	GGAGATCAGT	11760
ATTATCTGGG	GCCTTGGCGT	CGCCATGGCC	ATCTACCTGA	CGGCCGGTGT	CTCCGGCGCG	11820

CACCTAAATC CGGCGGTGAC CATTGCCCTG TGGCTGTTTCG CCTGTTTTGA ACGCCGCAAG	11880
GTGCTGCCGT TTATTGTTGC CCAGACGGCC GGGGCCTTCT GCGCCGCCGC GCTGGTGTAT	11940
GGGCTCTATC GCCAGCTGTT TCTCGATCTT GAACAGAGTC AGCATATCGT GCGCGGCACT	12000
GCCGCCAGTC TTAACCTGGC CGGGGTCTTT TCCACGTACC CGCATCCACA TATCACTTTT	12060
ATACAAGCGT TTGCCGTGGA GACCACCATC ACGGCAATCC TGATGGCGAT GATCATGGCC	12120
CTGACCGACG ACGGCAACGG AATTC	12145

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 30 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GGGAATTCAT GAAAAGATCA AAACGATTG	30
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(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 29 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GCGAATTCTT ATTCAATGGT GTCGGGCTG	29
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(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 30 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

GCGAATTCAT GCAACAGACA ACCCAAATTC	30
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(2) INFORMATION FOR SEQ ID NO: 5:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 25 base pairs

(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GCGAATTCAC TCCCTTACTA AGTCG

25

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

GCGAATTCAT GAGCTATCGT ATGTTTG

27

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GCGAATTCAG AATGCCTGGC GGAAAATC

28

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

GGGAATTCAT GAGCGAGAAA ACCATGCG

28

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GCGAATTCTT AGCTTCCTTT ACGCAGC 27

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 94 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

AGCTTAGGAG TCTAGAATAT TGAGCTCGAA TTCCCGGGCA TCGGTACCG GATCCAGAAA 60

AAAGCCCGCA CCTGACAGTG CGGGCTTTTT TTTT 94

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 33 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GGCCAAGCTT AAGGAGGTTA ATTAAATGAA AAG 33

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GCTCTAGATT ATTCAATGGT GTCGGG 26

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 42 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

GCGCCGTCTA GAATTATGAG CTATCGTATG TTTGATTATC TG 42

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 36 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

TCTGATACGG GATCCTCAGA ATGCCTGGCG GAAAAAT 36

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 181 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

CGATCTGTGC TGTTTGCCAC GGTATGCAGC ACCAGCGCGA GATTATGGGC TCGCACGCTC 60
GACTGTCGGA CGGGGGCACT GGAACGAGAA GTCAGGCGAG CCGTCACGCC CTTGACAATG 120
CCACATCCTG AGCAAATAAT TCAACCACTA AACAAATCAA CCGCGTTTCC CGGAGGTAAC 180
C 181

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 149 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

CGATCTGTGC TGTTTGCCAC GGTATGCAGC ACCAGCGCGA GATTATGGGC TCGCACGCTC 60
GACTGTCGGA CGGGGGCACT GGAACATGCC ACATCCTGAG CAAATAATTC AACCACTAAA 120

CAAATCAACC GCGTTTCCCG GAGGTAACC

149

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 33 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

GGAATTCACCT AGTCGATCTG TGCTGTTTGC CAC

33

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 33 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

GGGGAAGCTT GGTTACCTCC GGGAAACGCG GTT

33

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

TCGACCACAA GGAGGA

16

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CTAGTCCTCC TTGTGG

16

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 45 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

ACTGGCCGTC GTTTTACTCG AGTCGTGACT GGGAAAACCC TGGCG

45

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

AATTCAAAGG AGGT

14

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

CTAGACCTCC TTTG

14

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

AGCTTGTCGA CCATGAAAA

19

(2) INFORMATION FOR SEQ ID NO:25:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 19 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

GATCTTTTCA TGGTCGACA

19

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

TCGACCAGGA GGA

13

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

CTAGTCCTCC TGG

13

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 18 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

TCGACGAATT CAGGAGGA

18

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 18 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

CTAGTCCTCC TGAATTCG

18

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 23 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

ATGTACAAGA TCCTGATCGC CGA

23

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 22 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

TCAGCGGCGC AGGTAGGCGG CG

22

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 31 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

ATGACCAAGG GCCGGATCCG TCGACCTGCA G

31

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 32 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

CTACCCTTGG CCCCGGATCC GTCGACCTGC AG

32

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

CACGGCCTGG CGCAGGTTGC GGG

23

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

GGCAGCCCGC ACGATTGCGG C

21

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GCGGAAAACC GCCTGGATCG C

21

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 21 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GGGTTTCAGGG ACTGCAAAAC G

21

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GGAATTCAGA TCTCAGCAAT GAAAAGATCA AAACG

35

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 34 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

GGAATTCAGA TCTCAGCAAT GCAACAGACA ACCC

34

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 28 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GCTCTAGATC ACTCCCCTTA CTAAGTCG

28

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 37 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GGAATTCAGA TCTCAGCAAT GAGCGAGAAA ACCATGC

37

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 27 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GCTCTAGATT AGCTTCCTTT ACGCAGC

27

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 38 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GGAATTCAGA TCTCAGCAAT GAGCTATCGT ATGTTTGA

38

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

GCTCTAGATC AGAATGCCTG GCGG

24

(2) INFORMATION FOR SEQ ID NO:45:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

GGAATTCAGA TCTAGCAATG CCGTTAATAG CCGGG

35

(2) INFORMATION FOR SEQ ID NO:46:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 26 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GCTCTAGATT AATTCGCCTG ACCGGC

26